REMARKS/ARGUMENTS

Reconsideration of the application is requested.

Claims 1-3 and 6-8 remain in the application. Claim 1 has been amended. Claims 4 and 5 have been canceled.

In "Specification" in item 1 on page 2 of the above-identified Office Action, the Examiner objected to the title as not being indicative of the invention to which the claims are directed. The title has been amended to mention duplex operation. If further changes are required, a suggestion by the Examiner would be appreciated.

In "Specification" in item 2 on page 2 of the Office Action, the Examiner mentioned a spelling error in claim 4. The error has been corrected in the subject matter of claim 4 which has been placed in claim 1.

In "Claim Rejections - 35 USC § 103" in item 3 on pages 2-4 of the Office Action, claims 1, 3 and 4 have been rejected as being obvious over U.S. Patent No. 5,881,369 to Dean et al. (hereinafter Dean) under 35 U.S.C. § 103(a).

In "Claim Rejections - 35 USC § 103" in item 4 on page 4 of the Office Action, claim 2 has been rejected as being obvious over Dean under 35 U.S.C. § 103(a).

In "Claim Rejections - 35 USC § 103" in item 5 on pages 4-5 of the Office Action, claim 5 has been rejected as being obvious over Dean in view of U.S. Patent No. 5,619,531 to Taylor et al. (hereinafter Taylor) under 35 U.S.C. § 103(a).

In "Claim Rejections - 35 USC § 103" in item 6 on pages 5-6 of the Office Action, claim 6 has been rejected as being obvious over Dean in view of Taylor and further in view of U.S. Patent No. 6,175,746 to Nakayama et al. (hereinafter Nakayama) under 35 U.S.C. § 103(a).

In "Claim Rejections - 35 USC § 103" in item 7 on page 6 of the Office Action, claim 7 has been rejected as being obvious over Dean in view of U.S. Patent No. 7,734,970 to Saito under 35 U.S.C. § 103(a).

In "Claim Rejections - 35 USC § 103" in item 8 on pages 6-7 of the Office Action, claim 8 has been rejected as being obvious over Dean in view of U.S. Patent No. 6,628,960 to Tolson et al. (hereinafter Tolson) and further in view of U.S. Patent No. 6,370,360 to Kunkel under 35 U.S.C. § 103(a).

The rejections have been noted and claim 1 has been amended in an effort to even more clearly define the invention of the instant application. Support for the changes is found in original claims 4 and 5 of the instant application.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful. Claim 1 calls for, *inter alia*, a transceiver, comprising:

> first and second mixers;
>
> first and second local oscillators;
>
> a changeover switch connected to said first local oscillator, to said second local oscillator and to said second mixer;
>
> a third mixer connected to said second mixer;
>
> a digital-to-analog converter connected to said third mixer; and
>
> a third local oscillator connected to said third mixer.

Claim 1 as amended to include the subject matter of original claim 4 therefore now calls for a transceiver including a changeover switch (SW1) connected to said first local oscillator (LO1), to said second local oscillator (LO1') and to said second mixer (M2). It is thus now clear that the second mixer can be switched between the first local oscillator and a second local oscillator in order to provide a local oscillator signal to the second mixer.

Claim 1 as amended to include the subject matter of original claim 5 now also calls for a third mixer (MX3) connected to

said second mixer (MX2), a digital-to-analog converter (DA) connected to said third mixer (MX3), and a third local oscillator (LO2) connected to said third mixer (MX3). Therefore, claim 1 now also implicitly calls for a transceiver including a transmitting branch (T) which is of a heterodyne type including two cascaded mixers.

It is important to note that, according to the present invention as claimed in amended claim 1, the receiving (R) branch of the transceiver circuit is of a zero IF (intermediate frequency) type. This means that the basic structure of the receiving branch is of a homodyne type having only one mixing stage and requiring only one local oscillator frequency to be fed into the first mixer.

In contrast thereto, the transmitting branch (T) has a heterodyne structure including two mixing stages, namely a second mixer and a third mixer. A signal path (TI) of an intermediate frequency level is provided between the second mixer (MX2) and the third mixer (MX3). For this reason, two local oscillator frequencies are respectively required for the transmitting path, namely the local oscillator frequencies to be fed into the second mixer and the third mixer.

According to the present invention as recited in amended claim 1, the first mixer placed in the receiving branch is connected to a first local oscillator. The second mixer, which connects the intermediate frequency level to a radio frequency level within the transmitting branch, is switchably connected to either the first local oscillator or a second local oscillator. The third mixer, which connects a baseband level to the intermediate frequency level is connected to a third local oscillator.

According to the invention, when switching between the first and the second local oscillator feeding the second mixer, the transceiver can be switched between two different modes, namely a FDD (frequency division duplex) mode having fixed duplex frequency distance, and a second mode having a variable frequency distance, also within a FDD mode.

The Dean reference applied against the claims of the instant application relates to a dual mode transceiver. According to a first embodiment of Dean shown in Fig. 1 thereof, a transceiver is provided having a transmitting branch and a receiving branch. It is important to note that the intermediate frequency levels in the transmitting and receiving branches are identical, namely 250 MHz, as indicated near the circuitry 10 and switch 25 in Fig. 1 of Dean.

Dean is completely silent regarding the receiving branch being of a zero frequency type. It is important to note that the structure of the transceiver according to amended claim 1 and the structure of the transceiver according to Fig. 1 of Dean have significant differences. While the intermediate frequency levels in both the transmitting and receiving signal paths in Dean are the same, the intermediate frequency levels of the transceiver according to amended claim 1 differ significantly. The switches S5 and S6 in Fig. 2 of Dean are not provided to switch between FDD with fixed duplex and FDD with variable duplex, but to switch between upper and lower frequency bands and to switch between TDD mode and FDD modes, as is shown in Table 1 in column 4 of Dean. For these reasons, the transceiver according to amended claim 1 is not obvious over Dean.

Taylor relates to a transceiver circuit having two mixers placed in the transmitting path and fed by different local oscillators and further having a downconverter 6, which is fed by the first local oscillator. The first local oscillator also provides the local oscillator signal to the mixing stage which connects a baseband signal level to an intermediate frequency level. Taylor is completely silent on any switching

between different local oscillators. Thus, the transceiver according to amended claim 1 is also not obvious over Taylor.

In addition, it is important to note that both the transmitting and the receiving path of the transceiver according to Fig. 1 of Taylor are of the heterodyne type. The intermediate frequency within the receiver is preferably 45 MHz, according to column 3, lines 38 to 39 of Taylor. Therefore, neither Dean nor Taylor show the feature of claim 1 that the receiver branch is of a zero IF type having only a single downconverting stage. This is clear from the feature of claim 1 which refers to the intermediate frequency level within the receiver branch being between 0 and 0.5 MHz.

In view of the foregoing, it is believed to be clear that neither Dean nor Taylor show an important feature of amended claim 1, namely a zero IF receiver. For this reason, a combination of Dean and Taylor cannot result in a circuit having all the features of amended claim 1. Therefore, the transceiver according to claim 1 is believed to be patentable over a combination of Dean and Taylor.

Furthermore, the circuits disclosed in Dean and Taylor not only have a different structure, but also have completely different objects or problems to solve. In the present

invention, a transceiver circuit is to be provided which can handle different duplexing modes, namely TDD, FDD with variable duplex and FDD with fixed duplex frequency range. This object is met by the structure as recited in claim 1, namely by providing a transmitting branch of a heterodyne type and a receiving branch of zero IF type and by the distribution and switchability of local oscillator frequencies feeding the mixers according to the present invention. In contrast thereto, Taylor is completely silent on any dual mode operation. Dean refers to the dual mode transceiver architecture being able to operate in frequency division duplex mode and time division duplex mode. However, Dean is completely silent on different kinds of FDD modes, namely with fixed or variable duplex frequency distance. For this reason, the transceiver circuit according to amended claim 1 is both novel and non-obvious over a combination of Dean and Taylor.

The remaining references do not make up for the deficiencies of Dean and Taylor.

The Examiner is accordingly respectfully requested to reconsider the patentability of the claims on the basis of amended claim 1 and in the light of the facts and arguments presented above.

It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either show or suggest the features of claim 1. Claim 1 is, therefore, believed to be patentable over the art. The dependent claims are believed to be patentable as well because they all are ultimately dependent on claim 1.

In view of the foregoing, reconsideration and allowance of claims 1-3 and 6-8 are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate receiving a telephone call so that, if possible, patentable language can be worked out.

If an extension of time is required, petition for extension is herewith made. Any extension fee associated therewith should be charged to the Deposit Account of Lerner and Greenberg, P.A., No. 12-1099.

Appl. No. 09/836,981.
Amdt. Dated August 5, 2004
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Please charge any other fees that might be due with respect to Sections 1.16 and 1.17 to the Deposit Account of Lerner and Greenberg, P.A., No. 12-1099.

Respectfully submitted,

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